Patient-specific induced pluripotent stem cells to study synucleinopathies

https://www.neurodegenerationresearch.eu/survey/patient-specific-induced-pluripotent-stem-cells-to-study-synucleinopathies/

Principal Investigators

Laurent Roybon

Institution

Lund University

Contact information of lead PI
Country

Sweden

Title of project or programme

Patient-specific induced pluripotent stem cells to study synucleinopathies

Source of funding information

Swedish Research Council

Total sum awarded (Euro)

€ 228,509

Start date of award

01/01/2016

Total duration of award in years

3

Keywords
Research Abstract

Parkinson’s disease (PD) and multiple system atrophy (MSA) are neurodegenerative diseases with a shared pathology of intracellular alpha-synuclein (aSYN) aggregation, for which to date there is no cure. aSYN aggregation is cell-type specific as it occurs in neurons in Parkinson’s disease and is prominent in oligodendrocytes in MSA. The pathogenic mechanisms underlying initiation and progression of these diseases and cell-type-specific susceptibility for aggregation are still elusive because patient cells are only accessible post-mortem, when adaptive cellular and molecular mechanisms are already engaged. Here, we propose to use human neurons and oligodendrocytes generated from PD and MSA patient-specific induced pluripotent stem cells

(iPSCs), in order to elucidate causative molecular and cellular mechanisms leading to neuron and oligodendrocyte injury. We hypothesize that neurodegeneration is due to a combination of molecular and functional changes triggered by environmental stressors including inflammation and pathogenic agents transferred via exosomes, and influenced by the genetic background of the patients. We will use iPSC-derived neurons and oligodendrocytes to uncover early and advanced PD and MSA pathogenic mechanisms and phenotypes in vitro and in vivo, using state of the art omics techniques including RNAseq, as well as multi-electrode-array recordings, ELISA, immunocytochemistry and immunohistochemistry. Our work could lead to the identification of new molecular targets, which could be used for the development of novel diagnostic tools and treatments for PD and MSA

Further information available at:

Types:
Investments < €500k

Member States:
Sweden

Diseases:
N/A

Years:
2016

Database Categories:
N/A

Database Tags:
N/A